International application No.
10/584278
PCT/EP2004/053401

In respect of item VIII

Observations relating to the international application (clarity)

1 The application fails to comply with the requirements of PCT Article 6, **claim 1** being unclear.

1.1 The feature of **claim 1** whereby the angle of the buses to the wave propagation direction satisfies the formula **to within ± 0.5 degrees** is not mentioned in the description. **Claim 1** is therefore not based on the description, as PCT Article 6 requires.

In addition, "to within ± 0.5 degrees" does not seem to be sufficiently precise when it is considered that the angle is between 5 and 6 degrees (as in **claim 3**).

In respect of item V

Reasoned statement as regards novelty, inventive step and industrial applicability; citations and explanations in support of this statement

Documents

2. Reference is made to the following documents:

D1: BUFF W ET AL: "UNIVERSAL PRESSURE AND TEMPERATURE SAW SENSOR FOR WIRELESS APPLICATIONS" PROCEEDINGS OF THE 1997 IEEE ULTRASONICS SYMPOSIUM. ONTARIO, CANADA, OCT. 5 - 8, 1997, IEEE ULTRASONICS SYMPOSIUM PROCEEDINGS, NEW YORK, NY: IEEE, US, Vol. 1, 5 October 1997, pages 359-362, XP000848493 ISBN: 0-7803-4154-6

D2: EP-A-0 802 627 (NGK INSULATORS LTD) 22 October 1997.

Document D2 was not cited in the international search report. A copy of this document is appended herewith.

Novelty

3 The present invention complies with the requirements of PCT Article 33(1) since the subject matter of **claims 1-13** meets the requirement of novelty defined by PCT Article 33(2).

3.1 Document D1, which is considered to be the closest prior art of the subject matter of **claim 1**, describes (the references between parentheses apply to this document):

A remotely interrogable surface acoustic wave temperature sensor comprising, on the surface of a quartz substrate cut along the Y' direction making an angle θ with the Y direction ("Abstract" and the "Introduction" paragraph):
- at least two resonators having transducers consisting of interdigitated electrodes connected to control buses and of a design such that they have different characteristic operating frequencies (see the "Temperature Sensor", "Pressure Sensor" and "Sensor Design" paragraphs);
- a first resonator having a first surface acoustic wave propagation direction, parallel to one of the axes of the substrate, and a second resonator having a surface acoustic wave propagation direction making a nonzero angle (β) with the propagation direction of the first resonator (see figure 5 and the "Sensor Design" paragraph).

3.2 The subject matter of **claim 1** therefore differs from this known temperature sensor in that the control buses for the second transducer are inclined at a nonzero angle to the normal to the interdigitated electrodes of said second transducer and in that the angle satisfies the formula given in claim 1.

The subject matter of **claim 1** is therefore novel (PCT Article 33(2)).

3.3 **Claims 2-13** are dependent on **claim 1** and therefore also comply, as such, with the requirements of the PCT in respect of novelty.

Inventive step

4 The present application fails to comply with the requirements of PCT Article 33(1) since the subject matter of **claims 1-13** does not involve an inventive step as defined in PCT Article 33(3).

4.1 The problem that the present invention is intended to solve (see paragraph 3.2) may therefore be considered as being how to compensate for the power flow divergence of the acoustic waves with respect to the surface acoustic wave propagation direction along said second transducer for an acoustic wave temperature sensor with a quartz substrate.

4.2 The solution proposed in **claim 1** of the present application is not considered to be inventive (PCT Article 33(3) for the following reasons:

The "buses inclined at a nonzero angle to the normal to the interdigitated electrodes" for a surface acoustic wave device with a quartz substrate amounts to a standard technical approach (see for example document D2: page 9, lines 38-43; figures 19, 20). In document D2, the inclined buses are used for the same purpose as in **claim 1**, i.e. to compensate for the power flow divergence of the acoustic waves (see D2: page 9, line 40).

It would be obvious to the person skilled in the art to consider incorporating inclined buses into the surface acoustic wave temperature sensor described in document D1 in order to solve the stated problem.

In addition, the formula of **claim 1** represents only the mathematical expression of this known compensation. In the description, the origin of this formula is not explained, but it is for example possible that the formula is the result of a polynomial regression of measurement points. Determining a formula with a regression amounts to a standard technical approach for the person skilled in the art, and does not involve an inventive step.

Claim 1 is therefore not considered to be inventive (PCT Article 33(3)).

4.3 **Dependent claims 2-13** do not contain any features which, in combination with the features of any one of the claims to which they refer, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:

The features of **claims 2-13** amount to a standard technical approach for the person skilled in the art.